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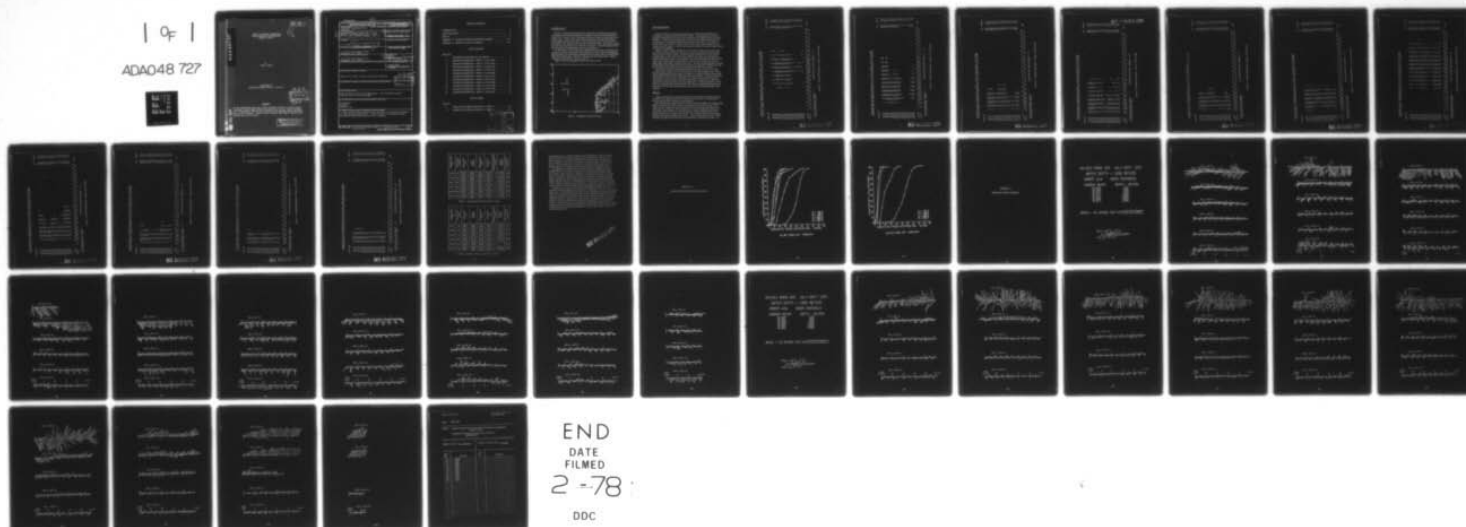
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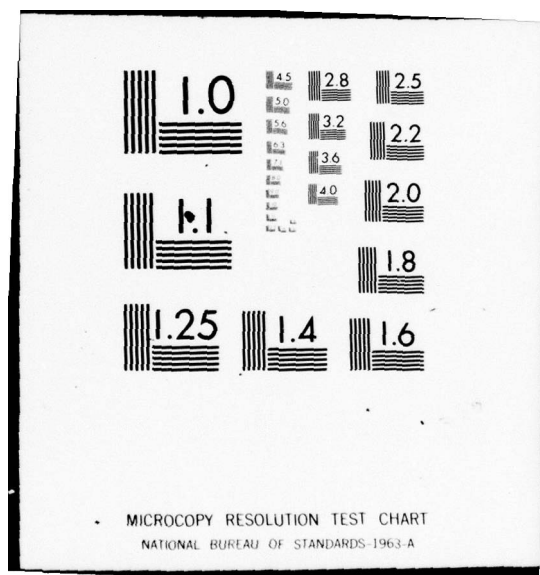
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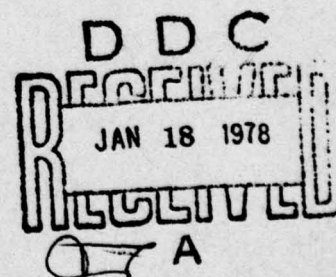
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RESULTS OF CURRENT OBSERVATIONS  
WILKES NORWEGIAN SEA OPERATIONS  
(ARRAYS 1 AND 2)

BY  
OTIS R. SMITH

SUPPLEMENT TO  
NAVOCEANO TECHNICAL NOTE NO. 6110-2-75



ABSTRACT

Current measurements were made in four separate locations at various depths in support of the WILKES Norwegian Sea Operations in July through September 1974. Measurements from the two locations in the Southern part of the Norwegian Sea are discussed. Speeds at both locations were high to moderate with maximum values of 90 cm/sec.

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20. ABSTRACT (Continue on reverse side if necessary and identify by block number) Gives current data collected at two locations in the southern Norwegian Sea July through September 1974. Data are reported in cumulative speed distribution graphs and graphs of vector averages.		

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ACCESSION NO. DTG DISPOSITION JUSTIFICATION	STATE ACTION DTG DISPOSITION JUSTIFICATION	DISTRIBUTION/AVAILABILITY CODES DTG AVAIL. AND SPECIAL	<div style="border: 1px solid black; height: 100px; position: relative;"> <div style="position: absolute; top: 0; right: 0; width: 50px; height: 50px; border: 1px solid black; text-align: center; line-height: 50px;">A</div> </div>
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## INTRODUCTION

The U.S. Naval Oceanographic Office implanted four tautlined arrays of self-contained current measuring instruments in support of Exercise WILKES-NORWAY, in July 1974. Arrays 1 and 2 will be discussed; Arrays 3 and 4 were discussed in an earlier report. Arrays 1 and 2 were bottom anchored in 1690 and 1960 meters of water respectively on 24 July 1974. Array 2 was retrieved on 9 September 1974 while Array 1 was retrieved a day later on 10 September 1974. The exercise yielded six usable data records for Array 1 and five for Array 2. The USNS WILKES (TAGS-33) was used for the implantation and recovery operations.

For information on (1) current meter components and hardware, (2) implant and recovery procedures, (3) physical characteristics of current meters and transponder/release devices, and (4) schematic representations of arrays, refer to NAVOCEANO TECHNICAL NOTE NO. 6110-2-75, "Results of Current Observations - WILKES Norwegian Sea Operations - (Arrays 3 and 4)".

Figure 1 shows the geographic locations of Arrays 1 and 2.

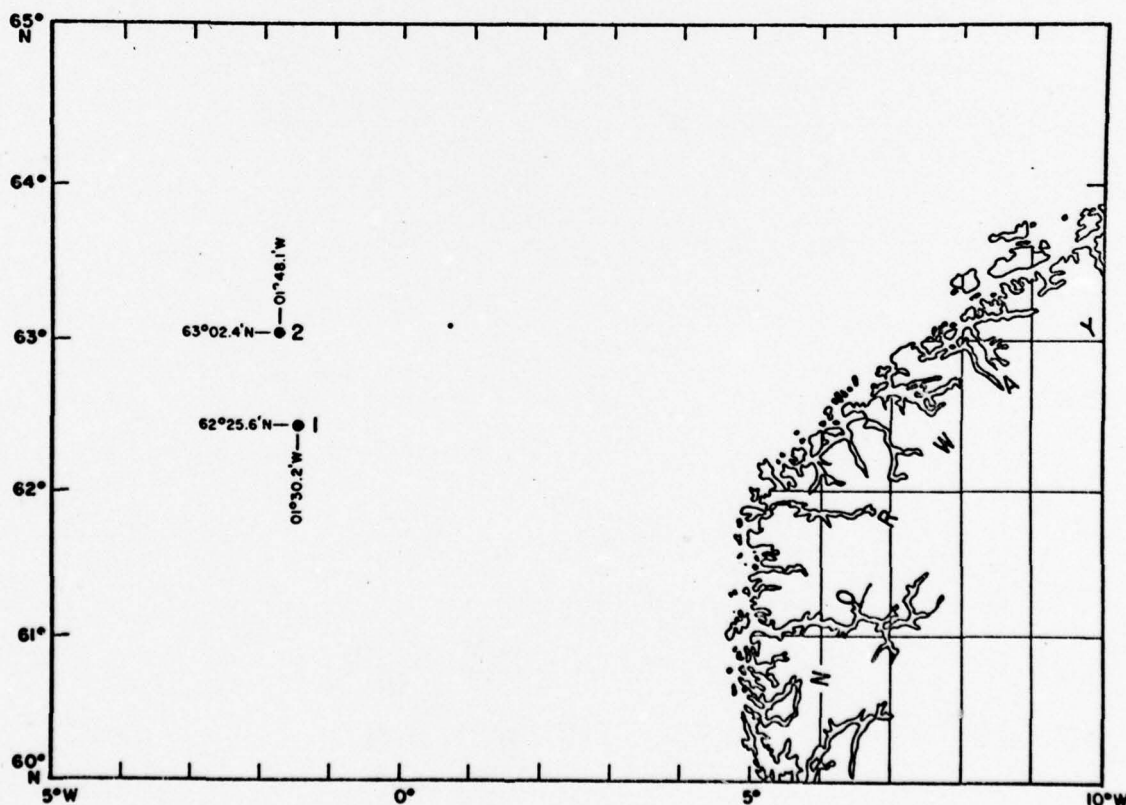


Figure 1. Geographic Location of Arrays

## DATA PROCESSING

After recovery, the current meter cameras were unloaded and data films were developed at the Naval Research Laboratory (NRL). The developed films were processed at NAVOCEANO by an in-house developed Optical Digital Analog Computer (OPDAC). OPDAC transfers digital data from the film onto IBM magnetic tape and also generates a multichannel strip chart analog trace of the data. A summary of current meter data is shown in Tables 1 and 2. The number of frames listed for each current meter (last column in each of these tables) is based on the number of data frames actually read by OPDAC.

Based on a record length of 1165 hours and 57 minutes (meter start to meter stop time) and a sampling interval of 15 minutes, the maximum number of frames possible for any meter in Array 1 is 4663. The actual number of frames will vary by a small number (higher or lower than the maximum number) if the clock used in starting the sampling is off (plus or minus a few seconds). This can be observed from Table 1 as the actual number of frames for meters N-474, N-472, N-411, N-466, and N-417 is 4638, 4638, 4639, 4638, and 4643 respectively. The film advance mechanism of meter N-429 stopped functioning after the instrument had recorded only 1598 frames of data. The resulting record was thus short by some 3065 frames (791 hours) of data.

The maximum number of data frames possible for any meter on Array 2 is 4540 (a record length of 1135 hours and 13 minutes and a 15 minute sampling rate). Meter N-492 contained 4271 frames of data, due again to a faulty film advance mechanism. Approximately 270 frames of data (67 hours) were not recorded. No data was recorded on the film from meter N-415. Apparently, the sequence timer failed to operate; consequently, the micro-switch was not actuated and no commands were sent to the electronics to flash light pulses to the data light platen. Further substantiation of this failure was obtained when the batteries for each meter were checked for power drainage; after recovery of the arrays the battery for meter N-415 showed no appreciable drainage.

## RESULTS

Figures 2 through 12 are computer printouts of the bivariate distribution of speed (5 cm/sec intervals) and direction (15° intervals) for each meter. Each printout is based on fifteen-minute averages (one data frame).

Data for printouts of Array 1 are for a 48-day period from 0000Z on 24 July through 0000Z on 10 September 1974, with the exception of the printout for meter N-429 (short record). Speeds were high to moderate and decreased with depth down to the 1000 meter level (maximum values of 75 cm/sec occurring at 100 meters decreasing to maximum values of 30 cm/sec at 1000 meters). Between 1000 and 1500 meters speeds increased to a maximum of 45 cm/sec. From 1500 to 1678 meters speeds again decrease with maximum values to 35 cm/sec. Currents throughout the water column (with the exception of the 100 meter level) exhibited a northeast flow pattern. At



WILKES NORW SEA 62 25.6N/01 30.2W ARRAY 1 CM N-429 DEPTH = 100M S/R = 15MIN  
 15-MINUTE AVERAGES WATER DEPTH = 1690M START TIME = 2210 23JUL74 R/L = 1165 HRS

DIRECTION	SUM	PER.CT.
0-15	18	1.1
15-30	22	1.4
30-45	41	2.6
45-60	89	5.6
60-75	141	8.9
75-90	122	7.7
90-105	145	9.1
105-120	127	8.0
120-135	131	8.2
135-150	104	6.5
150-165	113	7.1
165-180	142	8.9
180-195	172	10.6
195-210	128	8.0
210-225	41	2.6
225-240	11	0.7
240-255	11	0.7
255-270	4	0.3
270-285	5	0.3
285-300	2	0.1
300-315	4	0.3
315-330	3	0.2
330-345	4	0.3
345-360	13	0.8

NUMBER OF ZERO SPEED AVERAGES = 0 PERCENTAGE ZERO SPEED AVERAGES = 0.0  
 TOTAL NUMBER OF OBS. = 1593

Figure 2. Bivariate Distribution - Array 1, C/M N-429

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WILKES NORW SEA 62 25.6N/01 30.2W ARRAY 1 CM N-474 DEPTH = 200M S/R = 15MIN  
15-MINUTE AVERAGES WATER DEPTH = 1690M START TIME = 2210 23JUL74 R/L = 1165 HRS

DIRECTION	SUM	PER.CT.
0-15	426	9.3
15-30	389	8.5
30-45	281	6.1
45-60	557	12.1
60-75	592	12.9
75-90	241	5.3
90-105	275	6.0
105-120	248	5.4
120-135	239	5.2
135-150	235	5.1
150-165	293	6.4
165-180	228	5.0
180-195	230	5.0
195-210	98	2.1
210-225	8	0.2
225-240	1	0.0
240-255	0	0.0
255-270	0	0.0
270-285	0	0.0
285-300	6	0.1
300-315	28	0.6
315-330	67	1.5
330-345	145	3.2
345-360		

SPEED	0	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80	85	90	95	100
SUM	0	35	313	912	17	17.8	15.4	14.3	8.9	4.4	4.2	3.5	2.9	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
PER.CT.	0.0	0.8	6.8	19.9	17.8	15.4	14.3	8.9	4.4	4.2	3.5	2.9	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

NUMBER OF ZERO SPEED AVERAGES =	0	PERCENTAGE ZERO SPEED AVERAGES =	0.0
TOTAL NUMBER OF OBS. =	4587		

Figure 3. Bivariate Distribution - Array 1, C/M N-474



WILKES NORW SEA 62 85.6M/01 30.2M ARRAY 1 CM N-472 DEPTH = 500M S/R = 15MIN  
 15-MINUTE AVERAGES WATER DEPTH = 1690M START TIME = 2210 23JUL74 R/L = 1165 HRS

DIRECTION	0-15	15-30	30-45	45-60	60-75	75-90	90-105	105-120	120-135	135-150	150-165	165-180	180-195	195-210	210-225	225-240	240-255	255-270	270-285	285-300	300-315	315-330	330-345	345-360	SUM	PER.CT.
	3	25	111	83	20	1	1	11	1	11	1	2	1	1	1	1	1	1	1	1	1	1	1	1	243	5.3
	1	34	119	143	50	1	1	11	1	11	1	1	1	1	1	1	1	1	1	1	1	1	1	1	340	7.6
	7	61	162	263	111	12	12	11	12	11	12	1	1	1	1	1	1	1	1	1	1	1	1	1	616	13.4
	5	53	154	191	83	7	7	11	12	11	12	1	1	1	1	1	1	1	1	1	1	1	1	1	503	11.0
	4	34	145	171	67	1	1	11	12	11	12	1	1	1	1	1	1	1	1	1	1	1	1	1	422	9.2
		37	97	74	7			11	12	11	12	1	1	1	1	1	1	1	1	1	1	1	1	1	215	4.7
		20	60	35	4			11	12	11	12	1	1	1	1	1	1	1	1	1	1	1	1	1	119	2.6
	1	15	44	42	20			11	12	11	12	1	1	1	1	1	1	1	1	1	1	1	1	1	122	2.7
	1	19	71	45	42			11	12	11	12	1	1	1	1	1	1	1	1	1	1	1	1	1	193	4.2
	1	16	87	88	69			11	12	11	12	1	1	1	1	1	1	1	1	1	1	1	1	1	277	6.0
	2	17	52	81	33			11	12	11	12	1	1	1	1	1	1	1	1	1	1	1	1	1	189	4.1
	1	16	62	59	26			11	12	11	12	1	1	1	1	1	1	1	1	1	1	1	1	1	170	3.7
	1	13	57	41	28			11	12	11	12	1	1	1	1	1	1	1	1	1	1	1	1	1	152	3.3
	2	12	51	38	17			11	12	11	12	1	1	1	1	1	1	1	1	1	1	1	1	1	134	2.9
	2	12	27	6	1			11	12	11	12	1	1	1	1	1	1	1	1	1	1	1	1	1	48	1.0
	1	11	23	2				11	12	11	12	1	1	1	1	1	1	1	1	1	1	1	1	1	23	0.5
	1	11	23	9				11	12	11	12	1	1	1	1	1	1	1	1	1	1	1	1	1	43	0.9
	4	10	6	1				11	12	11	12	1	1	1	1	1	1	1	1	1	1	1	1	1	19	0.4
	3	10	15	1				11	12	11	12	1	1	1	1	1	1	1	1	1	1	1	1	1	21	0.5
	5	37	31	1				11	12	11	12	1	1	1	1	1	1	1	1	1	1	1	1	1	29	0.6
	2	22	61	56	12			11	12	11	12	1	1	1	1	1	1	1	1	1	1	1	1	1	75	1.6
	11	30	85	100	20			11	12	11	12	1	1	1	1	1	1	1	1	1	1	1	1	1	183	4.0
	7	17	91	60	21			11	12	11	12	1	1	1	1	1	1	1	1	1	1	1	1	1	246	5.4
								11	12	11	12	1	1	1	1	1	1	1	1	1	1	1	1	1	197	4.3

SPEED	0	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80	85	90	95	100	
SUM	54	516	1636	1635	434	84	7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4587
PER.CT.	1.2	11.2	35.7	36.1	13.8	1.9	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	

NUMBER OF ZERO SPEED AVERAGES = 0  
 TOTAL NUMBER OF OBS. = 4587  
 PERCENTAGE ZERO SPEED AVERAGES = 0.0

Figure 4. Bivariate Distribution - Array 1, C/M N-472

WILKES NORW SEA 62 23.68/01 30.2W ARRAY 1 CM N-466 DEPTH =1500M S/R = 15MIN  
 15-MINUTE AVERAGES WATER DEPTH =1690M START TIME = 2210 23JUL74 R/L =1165 HRS

DIRECTION	SUM	PER.CT.
0-15	193	4.2
15-30	338	7.4
30-45	588	12.8
45-60	452	9.9
60-75	450	9.8
75-90	219	4.8
90-105	137	3.0
105-120	107	2.3
120-135	80	1.7
135-150	71	1.5
150-165	78	1.7
165-180	56	1.2
180-195	49	1.0
195-210	33	0.7
210-225	107	2.3
225-240	172	3.7
240-255	143	3.1
255-270	186	4.1
270-285	145	3.2
285-300	182	4.0
300-315	259	5.6
315-330	188	4.1
330-345	186	4.1
345-360	169	3.7

SPEED	0	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80	85	90	95	100
SUM	511	1961	978	583	201	80	103	132	38	0	0	0	0	0	0	0	0	0	0	0	0
PER.CT.	11.1	42.8	21.3	12.7	4.4	1.7	2.2	2.9	0.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

NUMBER OF ZERO SPEED AVERAGES = 0 PERCENTAGE ZERO SPEED AVERAGES = 0.0  
 TOTAL NUMBER OF OBS. = 4587

Figure 6. Bivariate Distribution - Array 1, C/M N-466

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WILKES NORW SEA 62 25.6N/01 30.2W ARRAY 1 CM N-411 DEPTH = 1000  
 15-MINUTE AVERAGES WATER DEPTH = 1690M START TIME = 2210 23JUL74 R/L = 1165 HRS

DIRECTION	SUM	PER, CT.
0-15	229	5.0
15-30	322	7.0
30-45	303	6.6
45-60	527	11.5
60-75	518	11.3
75-90	191	4.2
90-105	123	2.7
105-120	91	2.0
120-135	105	2.3
135-150	85	1.9
150-165	91	2.0
165-180	78	1.7
180-195	54	1.2
195-210	56	1.2
210-225	121	2.6
225-240	174	3.8
240-255	202	4.4
255-270	133	2.9
270-285	120	2.6
285-300	130	2.8
300-315	205	4.5
315-330	257	5.6
330-345	247	5.4
345-360	223	4.9

SPEED	0	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80	85	90	95	100
SUM	105	1730	1752	780	200	18	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PER, CT.	2.3	37.7	38.2	17.0	4.4	0.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

NUMBER OF ZERO SPEED AVERAGES =	3	PERCENTAGE ZERO SPEED AVERAGES =	0.1
TOTAL NUMBER OF OBS. =	4588		

Figure 5. Bivariate Distribution - Array 1, C/M N-411

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WILKES NORW SEA 62 25.6N/01 30.2W ARRAY 1 CM N-417 DEPTH =1678M S/R = 15MIN  
 15-MINUTE AVERAGES WATER DEPTH =1690M START TIME = 2210 23JUL74 R/L =1165 HRS

DIRECTION	0-15	15-30	30-45	45-60	60-75	75-90	90-105	105-120	120-135	135-150	150-165	165-180	180-195	195-210	210-225	225-240	240-255	255-270	270-285	285-300	300-315	315-330	330-345	345-360	SUM	PER.CT.
	1	1	8	10	7	7	1	5	7	3	3	1	2	4	19	44	38	19	10	9	22	3	3	207	4.5	
	31	63	96	102	47	58	23	45	12	5	15	12	14	20	27	59	116	50	31	60	79	28	24	254	5.5	
	84	67	88	100	102	144	71	66	36	13	22	24	16	21	21	33	31	22	21	39	41	20	11	402	8.8	
	53	81	88	100	82	64	64	46	40	23	22	16	10	11	12	16	12	12	12	47	41	28	41	380	9.0	
	30	62	91	83	70	54	40	53	40	23	28	16	10	11	12	16	12	12	12	47	41	28	41	376	8.3	
	12	21	51	50	53	47	16	13	11	12	14	4	1	3	6	16	12	12	12	14	9	1	11	162	4.9	
	1	1	1	1	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	107	2.3	
	83	92	44	45	76	170	200	212	110	123	174	228	217	251	4592											

SPEED	0	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80	85	90	95	100			
SUM	55	598	1413	1182	959	364	10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4592		
PER.CT.	1.2	13.0	30.9	25.7	20.7	8.4	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			

NUMBER OF ZERO SPEED AVERAGES = 0      PERCENTAGE ZERO SPEED AVERAGES = 0.0  
TOTAL NUMBER OF OBS. = 4592

NUMBER OF ZERO SPEED AVERAGES = 0 PERCENTAGE ZERO SPEED AVERAGES = 0.0  
 TOTAL NUMBER OF OBS. = 4592

Figure 7. Bivariate Distribution - Array 1, C/M N-417





WILKES NORW SEA 63 02.4N/02 48.1W ARRAY 2 CM N-400 DEPTH = 200M S/R = 15MIN  
 15-MINUTE AVERAGES WATER DEPTH 1960M START TIME = 0847 24JUL74 R/L = 1135 HRS

DIRECTION	0	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80	85	90	95	100	SUM	PER.CT.	
0-15	3	39	63	23	8	23	36	6														206	4.6	
15-30	1	28	45	19	2	15	11															122	2.7	
30-45	1	5	32	57	39	9	2															146	3.3	
45-60	7	28	46	38	59	17	3															198	4.5	
60-75	2	38	39	32	36	14																161	3.6	
75-90	2	77	48	7																		134	3.0	
90-105	12	130	96	14	1																	253	5.7	
105-120	13	138	135	31	1																	319	7.2	
120-135	19	118	107	39	5																	288	6.5	
135-150	14	78	73	29	23	14																231	5.2	
150-165	23	58	50	36	24	19																209	4.7	
165-180	8	39	62	38	24	12	5															188	4.2	
180-195	2	22	30	14	5	16																89	2.0	
195-210	3	20	18	9	8	7																65	1.5	
210-225	2	25	24	21	1	4																75	1.7	
225-240	2	29	44	20	2																	88	2.0	
240-255	1	21	15	12	1																	55	1.2	
255-270	1	21	14	14	5	10	12															80	1.8	
270-285	2	20	20	16	13	90	118	6														335	7.5	
285-300	1	19	37	14	9	58	55															233	5.2	
300-315	1	23	47	24	30	72	53															289	6.5	
315-330	1	23	47	24	30	72	53															326	7.3	
330-345	2	25	46	19	27	89	90															263	5.9	
345-360	5	34	39	16	34	61	59																	
SPEED	0	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80	85	90	95	100			
SUM	0	131	1081	1196	549	325	530	450	141	39	0	0	0	0	0	0	0	0	0	0	0	4442		
PER.CT.	0.0	2.9	24.3	26.9	12.4	7.3	11.9	10.1	3.2	0.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	44.2		
NUMBER OF ZERO SPEED AVERAGES = 1																							PERCENTAGE ZERO SPEED AVERAGES = 0.0	
TOTAL NUMBER OF OBS. = 4443																								

NUMBER OF ZERO SPEED AVERAGES = 1 PERCENTAGE ZERO SPEED AVERAGES = 0.0  
 TOTAL NUMBER OF OBS. = 4443

Figure 9. Bivariate Distribution - Array 2, C/M N-400

WILKES NORW SEA 63 02.4N/02 48.1W ARRAY 2 CM N-492 DEPTH = 500M S/R = 15MIN  
 15-MINUTE AVERAGES WATER DEPTH = 1960M START TIME = 0847 24JUL74 R/L = 1135 HRS

DIRECTION	0-15	15-30	30-45	45-60	60-75	75-90	90-105	105-120	120-135	135-150	150-165	165-180	180-195	195-210	210-225	225-240	240-255	255-270	270-285	285-300	300-315	315-330	330-345	345-360	SUM	PER.CT.
	9	104	59	9	1	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	184	4.4
	4	109	82	4	4	9	2	1	6	1															202	4.8
	7	130	92	4	4	9	2	1	6	1															239	5.7
	5	143	123	9	1	1	2	1	6	1															281	6.7
	4	149	165	26	1	1	1	1	6	1															344	8.2
	5	139	142	13	1	1	1	1	6	1															299	7.1
	8	103	70	6	1	1	1	1	6	1															192	4.6
	7	103	40	1	1	1	1	1	6	1															150	3.6
	5	70	21	1	1	1	1	1	6	1															96	2.3
	6	50	12	1	1	1	1	1	6	1															79	1.9
	4	47	10	1	1	1	1	1	6	1															62	1.5
	5	36	27	1	1	1	1	1	6	1															69	1.6
	4	72	52	1	1	1	1	1	6	1															129	3.1
	8	70	79	7	1	1	1	1	6	1															164	3.9
	5	69	97	8	1	1	1	1	6	1															179	4.3
	2	85	86	23	1	1	1	1	6	1															197	4.7
	3	93	73	30	5	3	1	1	6	1															207	4.9
	5	90	97	32	5	3	1	1	6	1															223	5.3
	4	71	84	46	1	1	1	1	6	1															186	4.4
	3	64	42	17	2	1	1	1	6	1															131	3.1
	4	49	41	13	1	1	1	1	6	1															109	2.6
	4	43	43	20	1	1	1	1	6	1															111	2.7
	1	77	49	23	9	1	1	1	6	1															159	3.8
	3	72	62	7	1	1	1	1	6	1															153	3.7
SPEED	0	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80	85	90	95	100					
SUM	12	2043	1649	280	43	10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4145	
PER.CT.	2.9	48.9	39.4	6.7	1.0	0.2	0.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		

NUMBER OF ZERO SPEED AVERAGES = 37 PERCENTAGE ZERO SPEED AVERAGES = 0.9  
 TOTAL NUMBER OF OBS. = 4182

Figure 10. Bivariate Distribution - Array 2, C/M N-492

DIRECTION	SUM	PER.CT.
0-15	260	5.9
15-30	337	7.6
30-45	414	9.3
45-60	308	6.9
60-75	270	6.1
75-90	189	4.3
90-105	176	4.0
105-120	150	3.4
120-135	119	2.7
135-150	101	2.3
150-165	99	2.2
165-180	101	2.3
180-195	135	3.0
195-210	209	4.7
210-225	274	6.2
225-240	263	5.9
240-255	249	5.6
255-270	179	4.0
270-285	136	3.1
285-300	99	2.2
300-315	82	1.8
315-330	64	1.4
330-345	94	2.1
345-360	120	2.7

NUMBER OF ZERO SPEED AVERAGES = 9  
TOTAL NUMBER OF OBS. = 4437  
PERCENTAGE ZERO SPEED AVERAGES = 0.2

Figure 11. Bivariate Distribution - Array 2, C/M N-487

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WILKES NOAA SEA 63 02.4N/02 48.1W ARRAY 2 CM N-491 DEPTH =1948M S/R = 15MIN  
 15-MINUTE AVERAGES WATER DEPTH #1960M START TIME = 0847 24JUL74 R/L =1135 HRS

DIRECTION	SUM	PER.CT.
0-15	187	4.2
15-30	205	4.6
30-45	253	5.7
45-60	216	4.9
60-75	195	4.4
75-90	314	7.1
90-105	382	8.6
105-120	274	6.2
120-135	223	5.0
135-150	207	4.7
150-165	159	3.6
165-180	138	3.1
180-195	94	2.1
195-210	88	2.0
210-225	118	2.7
225-240	96	2.2
240-255	122	2.7
255-270	135	3.0
270-285	98	2.2
285-300	140	3.2
300-315	175	3.9
315-330	186	4.2
330-345	205	4.6
345-360	219	4.9

SPEED	0	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80	85	90	95	100
SUM	754	2868	786	36	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PER.CT.	17.1	64.6	17.7	0.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

NUMBER OF ZERO SPEED AVERAGES =	11	PERCENTAGE ZERO SPEED AVERAGES =	0.2
TOTAL NUMBER OF OBS. =	4440		

Figure 12. Bivariate Distribution - Array 2, C/M N491



CURRENT METER S/N	METER DEPTH (meters)	METER START TIME	ARRAY MOORED	RELEASE DEVICE FIRED	METER STOP TIME	SAMPLING INTERVAL (minutes)	RECORD LENGTH	NO. OF FRAMES ON FILM
N-429	100	7-23-74 2210Z	7-24-74 0200Z	9-10-74 0746Z	9-10-74 1207Z	15	1165 hrs 57 min	1598
N-474	200	7-23-74 2210Z	7-24-74 0200Z	9-10-74 0746Z	9-10-74 1207Z	15	1165 hrs 57 min	4638
N-472	500	7-23-74 2210Z	7-24-74 0200Z	9-10-74 0746Z	9-10-74 1207Z	15	1165 hrs 57 min	4638
N-411	1000	7-23-74 2210Z	7-24-74 0200Z	9-10-74 0746Z	9-10-74 1207Z	15	1165 hrs 57 min	4639
N-466	1500	7-23-74 2210Z	7-24-74 0200Z	9-10-74 0746Z	9-10-74 1207Z	15	1165 hrs 57 min	4638
N-417	1678	7-23-74 2210Z	7-24-74 0200Z	9-10-74 0746Z	9-10-74 1207Z	15	1165 hrs 57 min	4643

Table 1. Summary of Current Meter Data - Array 1.

CURRENT METER S/N	METER DEPTH (meters)	METER START TIME	ARRAY MOORED	RELEASE DEVICE FIRED	METER STOP TIME	SAMPLING INTERVAL (minutes)	RECORD LENGTH	NO. OF FRAMES ON FILM
N-467	100	7-24-74 0847Z	7-24-74 1200Z	9-9-74 1319Z	9-9-74 1600Z	15	1135 hrs 13 min	4531
N-400	200	7-24-74 0847Z	7-24-74 1200Z	9-9-74 1319Z	9-9-74 1600Z	15	1135 hrs 13 min	4532
N-492	500	7-24-74 0847Z	7-24-74 1200Z	9-9-74 1319Z	9-9-74 1600Z	15	1135 hrs 13 min	4271
N-487	1000	7-24-74 0847Z	7-24-74 1200Z	9-9-74 1319Z	9-9-74 1600Z	15	1135 hrs 13 min	4526
N-415	1500	7-24-74 0847Z	7-24-74 1200Z	9-9-74 1319Z	9-9-74 1600Z	15	0	none
N-491	1948	7-24-74 0847Z	7-24-74 1200Z	9-9-74 1319Z	9-9-74 1600Z	15	1135 hrs 13 min	4529

Table 2. Summary of Current Meter Data - Array 2.



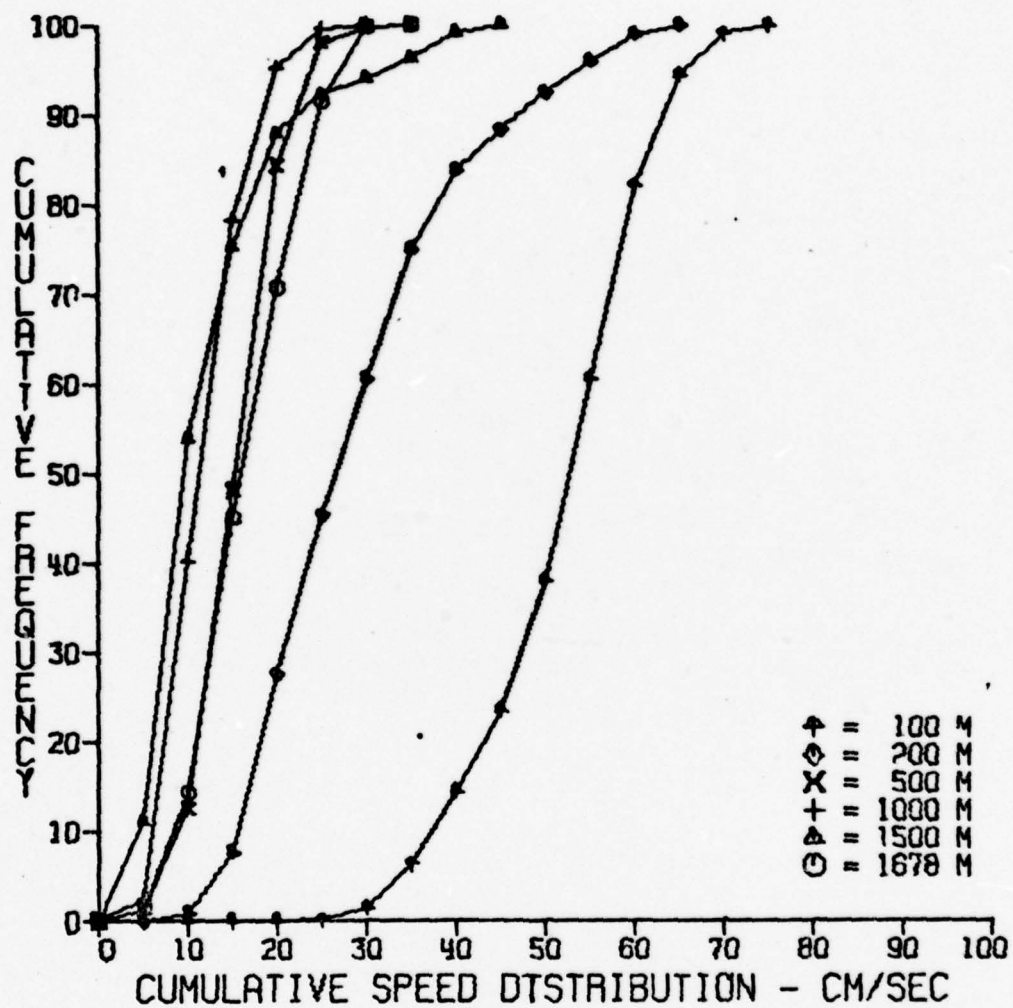
the 100 meter level, no distinct pattern could be determined. This is probably attributed to the fact that the record for the meter at this level was only one-third as long as the records for the other five-meters; therefore, the period of time (16 days) covered by the record may have been too short to establish a set pattern. The maximum speed of 75 cm/sec recorded at 100 meters may not be representative of the total period of the array due to the incomplete record.

Data for printouts of Array 2 span a 46-day period from 0000Z on 25 July through 0000Z on 9 September 1974 (meter N-492 was short by approximately 2 1/2 days). Speeds again were high to moderate and decreased with depth. The maximum values ranged from 90 cm/sec at 100 meters to 20 cm/sec at 1948 meters. It should be noted that the increase in speeds between 1000 and 1500 meters observed in Array 1 could not be detected because the meter (N-415) at 1500 meters did not operate. There appeared to be no dominant direction of flow at any of the five depths monitored by Array 2. Each depth seemed to exhibit two or more directions of flow with no one direction taking precedence over the others.

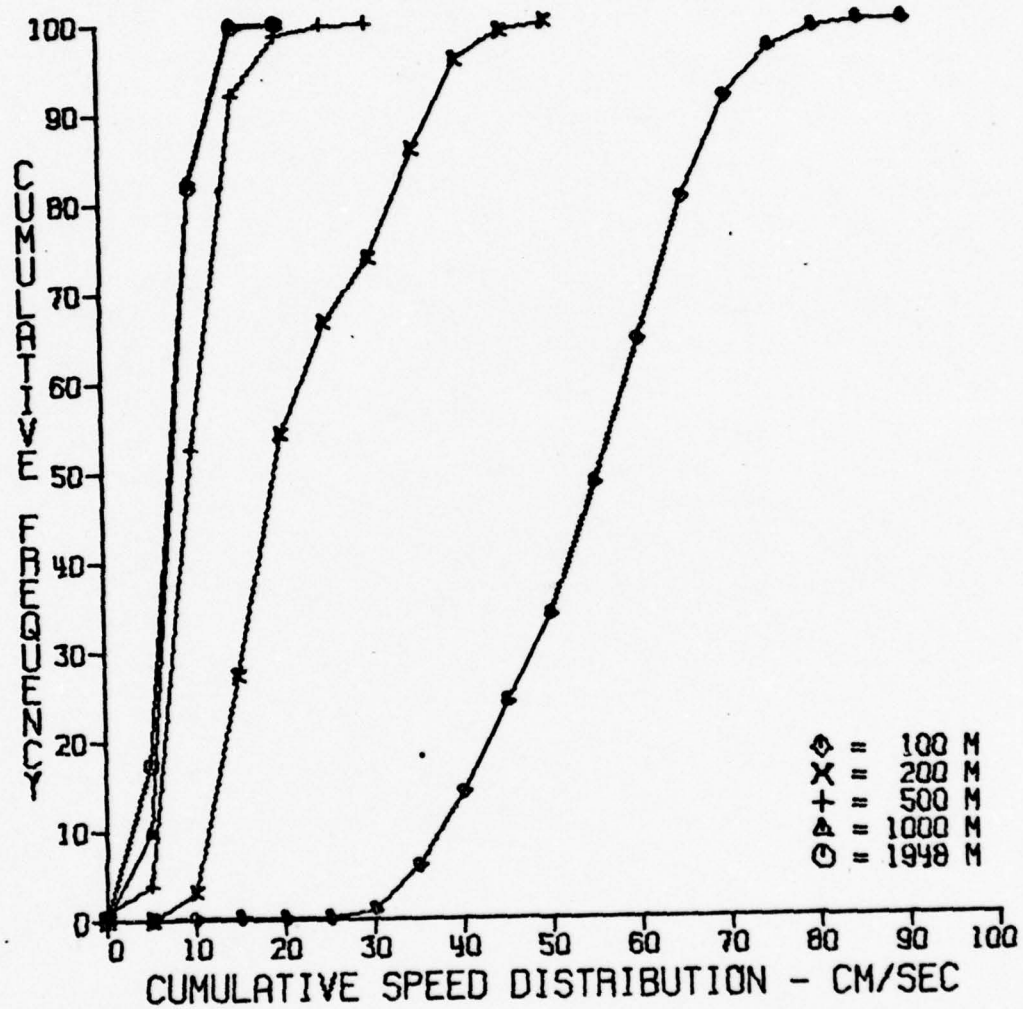
Appendix A contains a cumulative speed distribution graph for each array. Appendix B contains graphs of current vectors as a function of time for each meter of each array. Each plotted line represents a vector averaged over a 60 minute period. The distance between the long tick marks covers a period of 24 hours with each of these time periods being divided by a shorter tick mark representing 12 hours. It should be noted that north is to the reader's right. Currents in the area measured by Array 1 tended to exhibit the same general direction of flow throughout the column. The exception to this trend occurs in the first fifteen days when the top three levels show a different direction of flow than the bottom three levels. Currents in the area of Array 2 showed tidal influence at one or more depths for about 25 of the 46-day period.

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APPENDIX A  
CUMULATIVE SPEED DISTRIBUTION GRAPHS



WILKES NORW SEA ARRAY #1\*



WILKES NORW SEA ARRAY #2



APPENDIX B  
GRAPHS OF VECTOR AVERAGES



WILKES NORW SEA JULY-SEPT 1974

WATER DEPTH = 1690 METERS

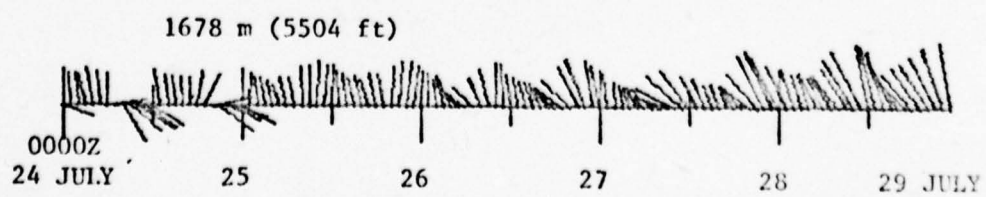
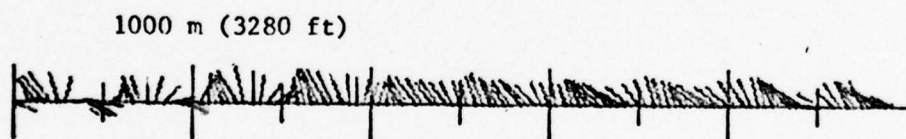
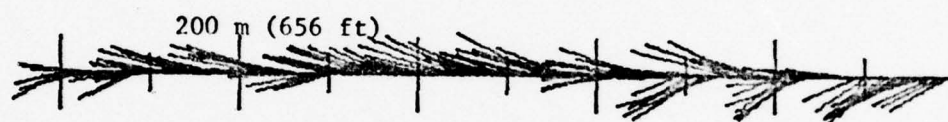
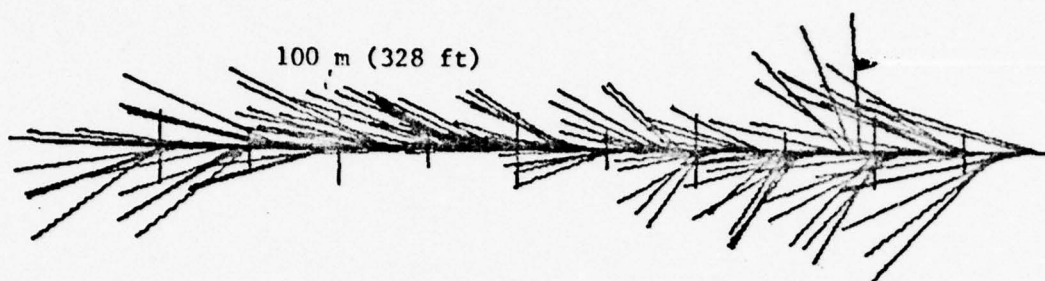
ARRAY \*1\* HOUR AVERAGES

CURRENT METER	DEPTH - METERS
N-429	100
N-474	200
N-472	500
N-411	1000
N-466	1500
N-417	1678

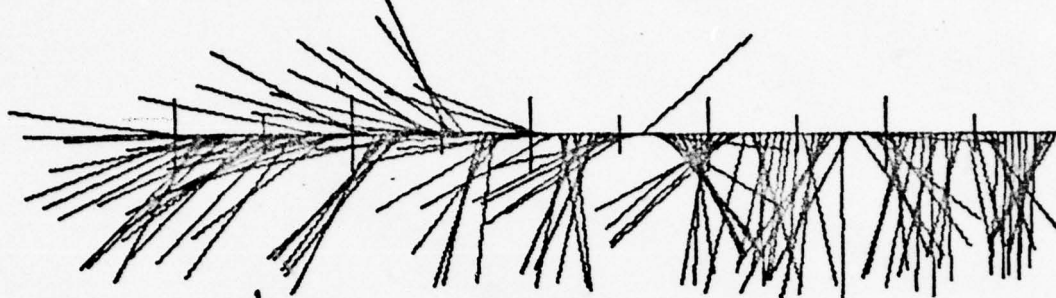
SCALE = 25 CM/SEC PER CM

0 13 25 38 50 63 75 88 100 113 125





100 m (328 ft)



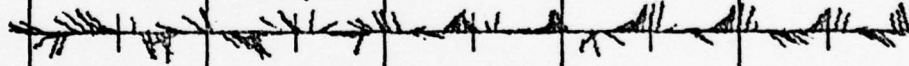
200 m (656 ft)



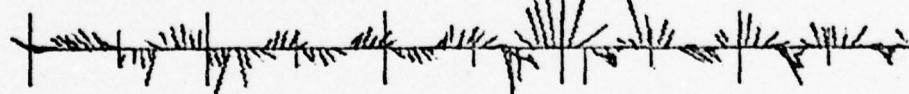
500 m (1640 ft)



1000 m (3280 ft)



1500 m (4920 ft)



1678 m (5504 ft)



0000Z  
29 JULY

30

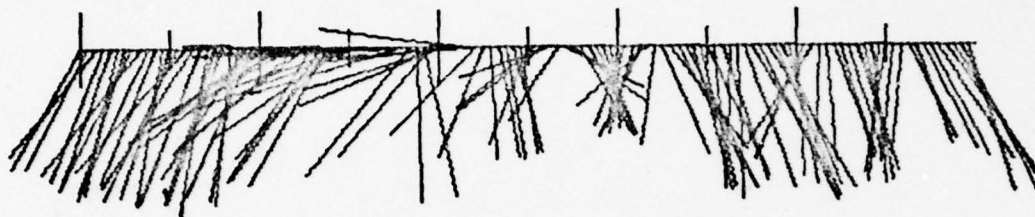
31

1

2

3 AUG.

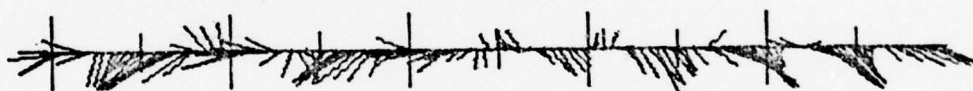
100 m (328 ft)



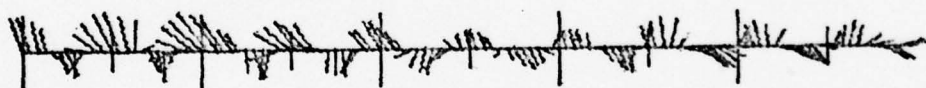
200 m (656 ft)



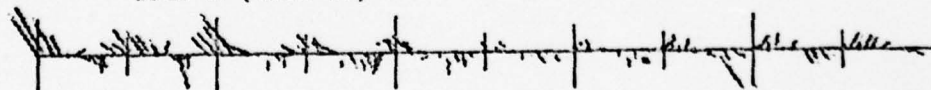
500 m (1640 ft)



1000 m (3280 ft)



1500 m (4920 ft)



1678 m (5504 ft)



0000Z  
3 AUG.

4

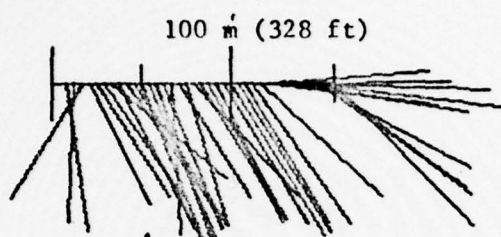
5

6

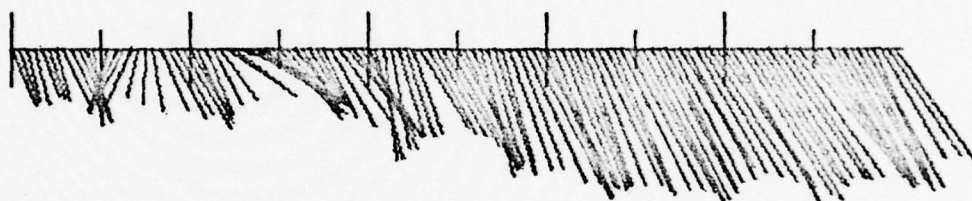
7

8 AUG.





200 m (656 ft)



500 m (1640 ft)



1000 m (3280 ft)



1500 m (4920 ft)



1678 m (5504 ft)

0000Z

8 AUG.

9

10

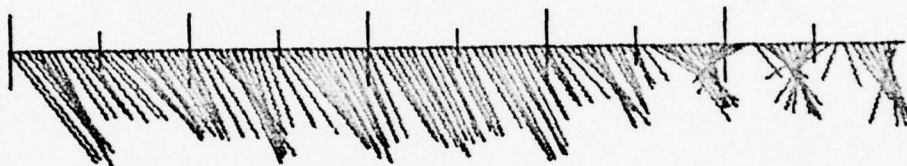
11

12

13 AUG.



200 m (656 ft)



500 m (1640 ft)



1000 m (3280 ft)



1500 m (4920 ft)



1678 m (5504 ft)



200 m (656 ft)



500 m (1640 ft)



1000 m (3280 ft)



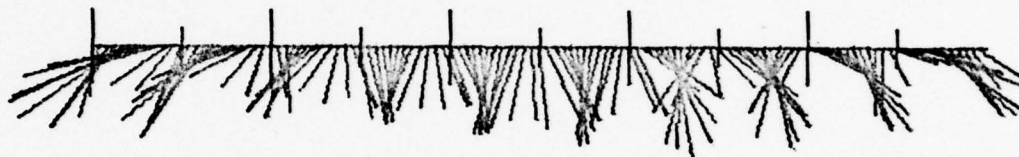
1500 m (4920 ft)



1678 m (5504 ft)



200 m (656 ft)



500 m (1640 ft)



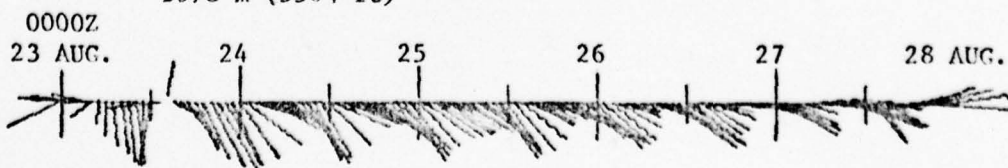
1000 m (3280 ft)



1500 m (4920 ft)



1678 m (5504 ft)





200 m (656 ft)



500 m (1640 ft)



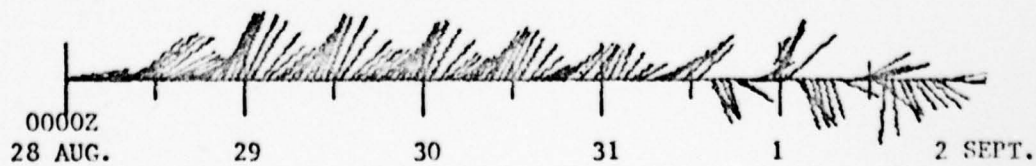
1000 m (3280 ft)



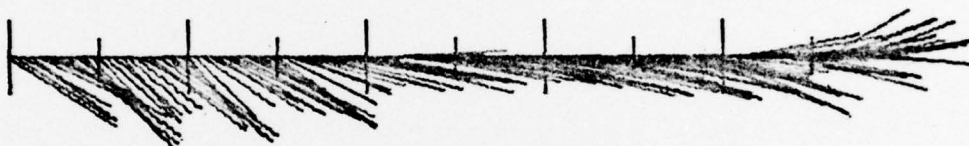
1500 m (4920 ft)



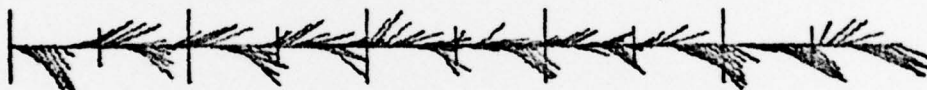
1678 m (5504 ft)



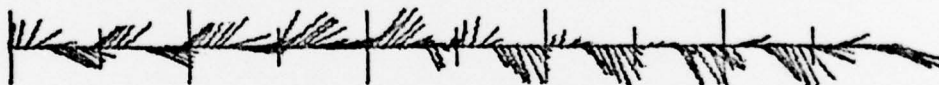
200 m (656 ft)



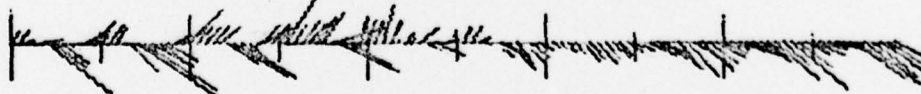
500 m (1640 ft)



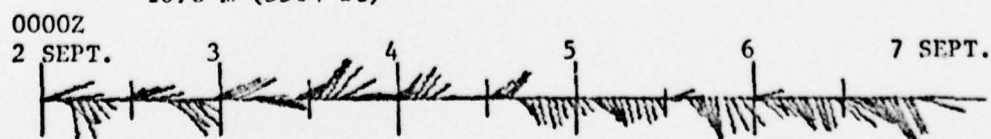
1000 m (3280 ft)



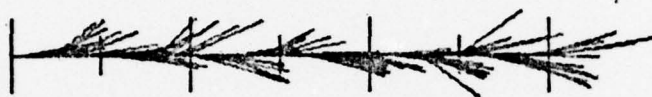
1500 m (4920 ft)



1678 m (5504 ft)



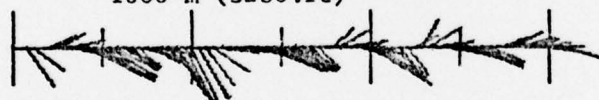
200 m (656 ft)



500 m (1640 ft)



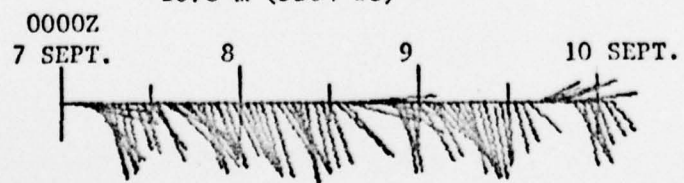
1000 m (3280 ft)



1500 m (4920 ft)



1678 m (5504 ft)



WILKES NORW SEA JULY-SEPT 1974

WATER DEPTH = 1960 METERS

ARRAY \*2\* HOUR AVERAGES

CURRENT METER

DEPTH - METERS

N-467

100

N-400

200

N-492

500

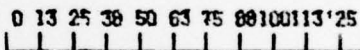
N-487

1000

N-491

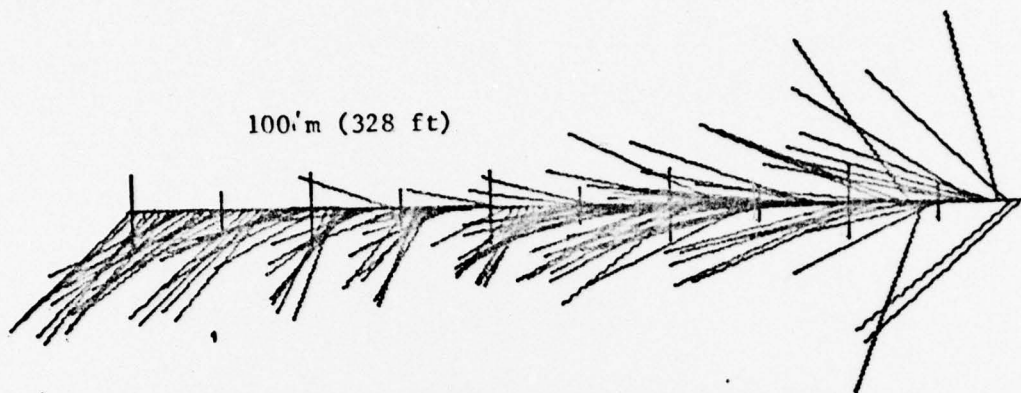
1948

SCALE = 25 CM/SEC PER CM





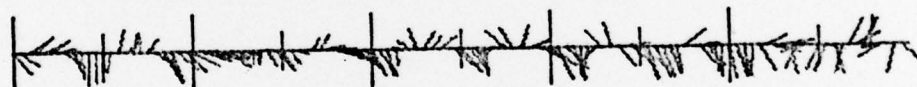
100.1 m (328 ft)



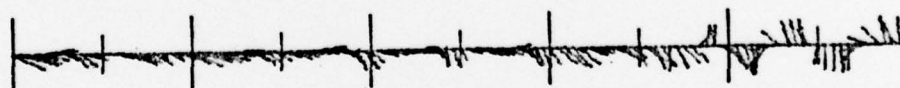
200 m (656 ft)



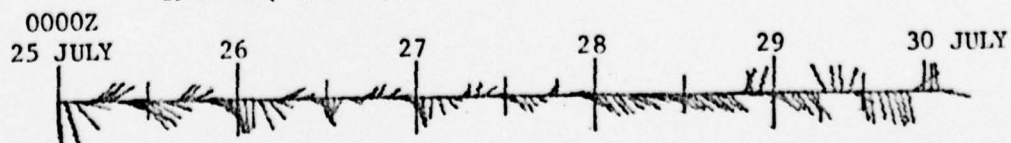
500 m (1640 ft)



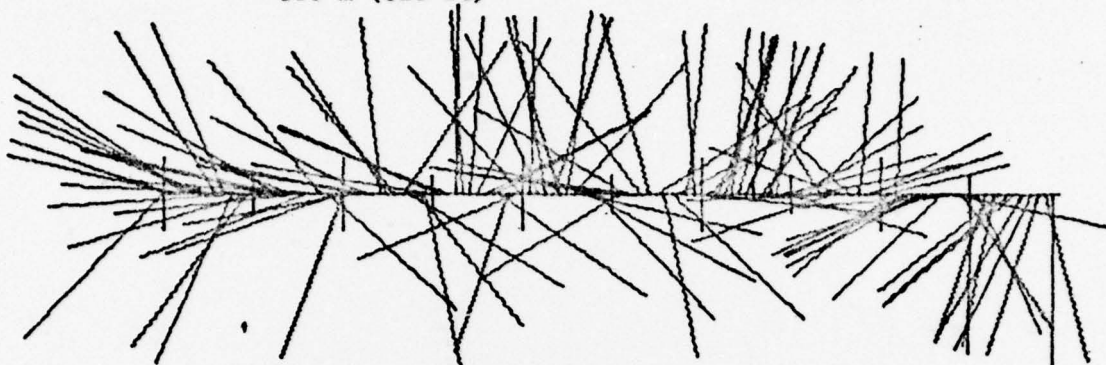
1000 m (3280 ft)



1948 m (6389 ft)



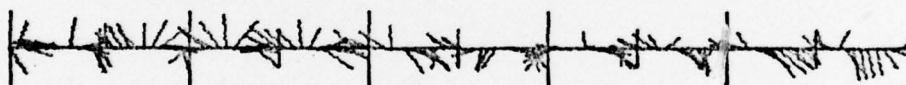
100 m (328 ft)



200 m (656 ft)



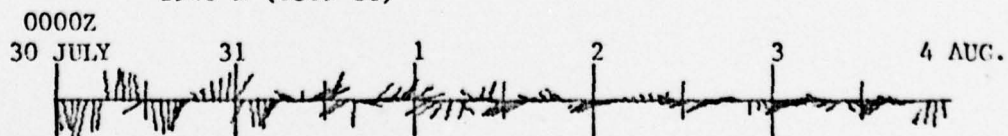
500 m (1640 ft)

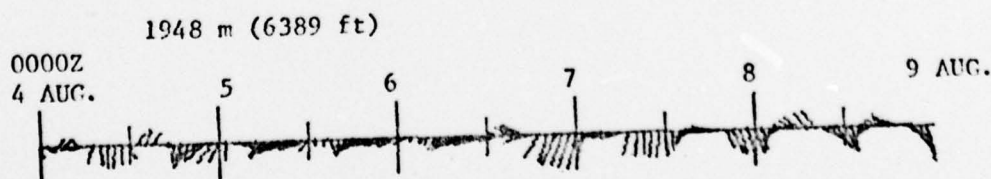
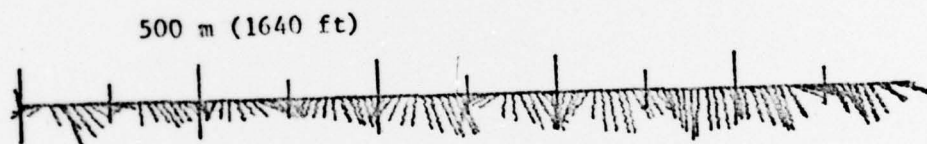
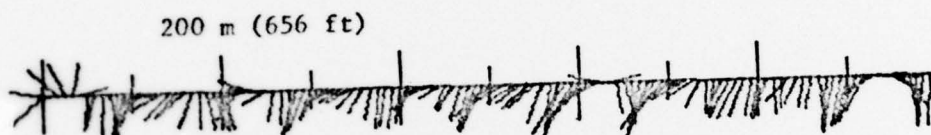
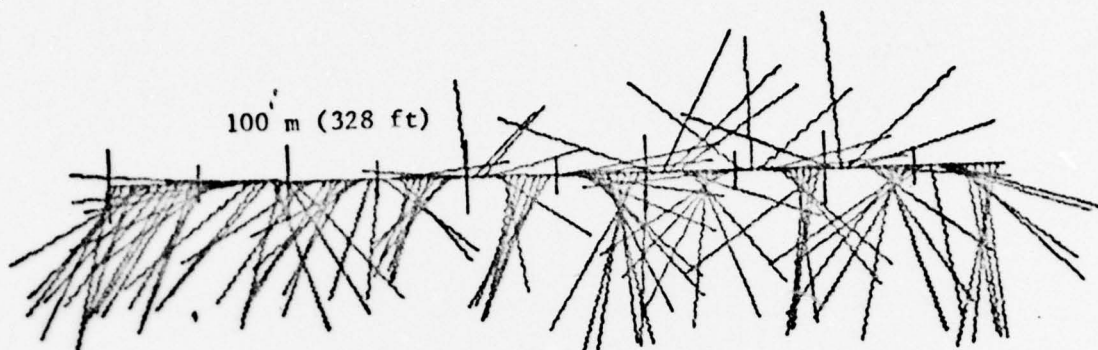


1000 m (3280 ft)

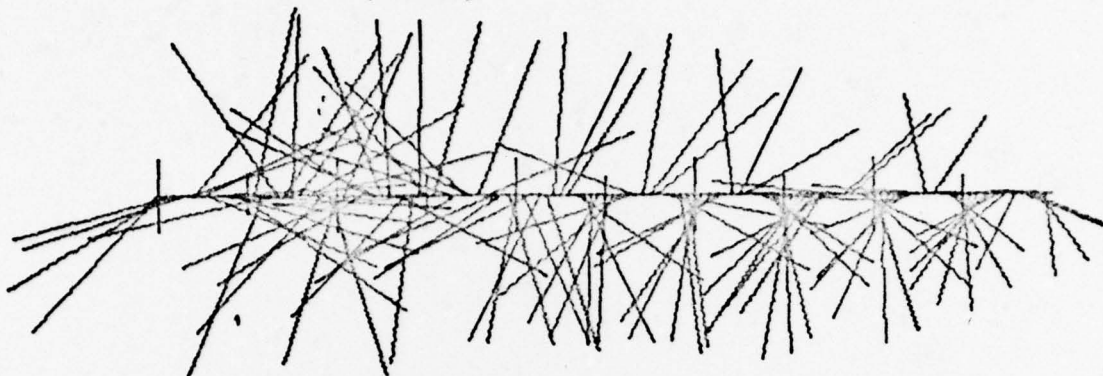


1948 m (6389 ft)





100 m (328 ft)



200 m (656 ft)



500 m (1640 ft)



1000 m (3280 ft)

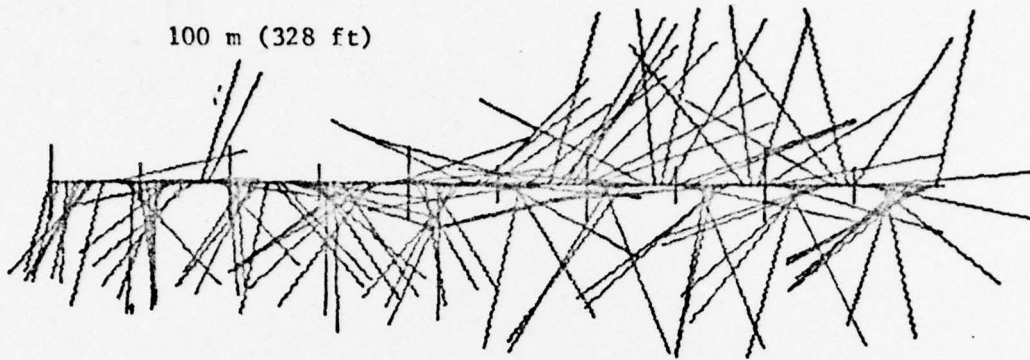


1948 m (6389 ft)





100 m (328 ft)



200 m (656 ft)



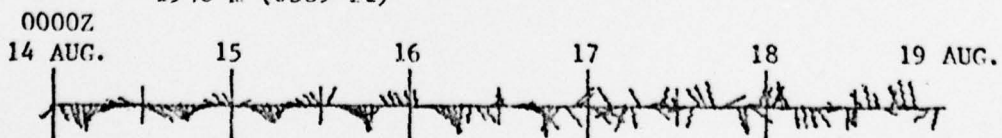
500 m (1640 ft)



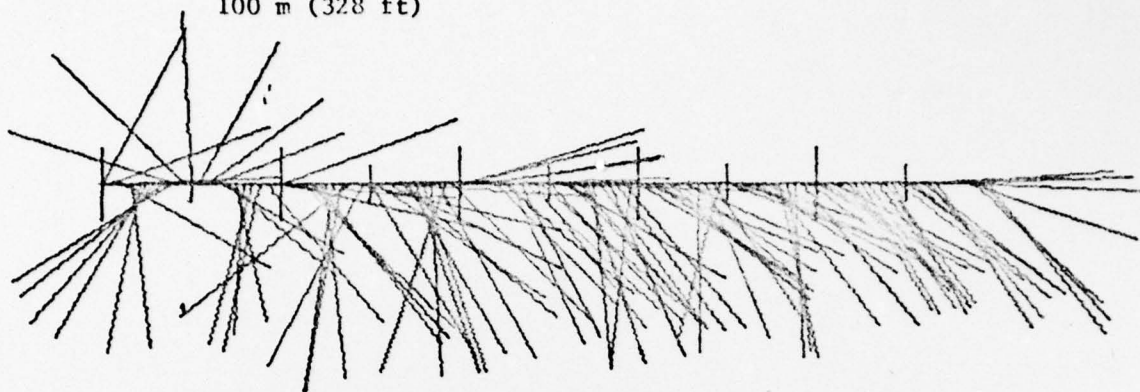
1000 m (3280 ft)



1948 m (6389 ft)



100 m (328 ft)



200 m (656 ft)



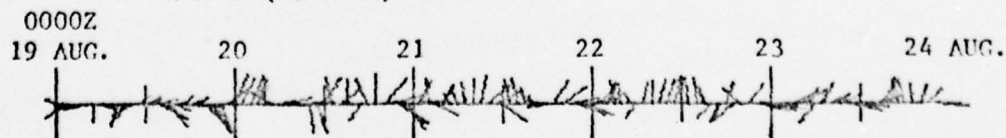
500 m (1640 ft)



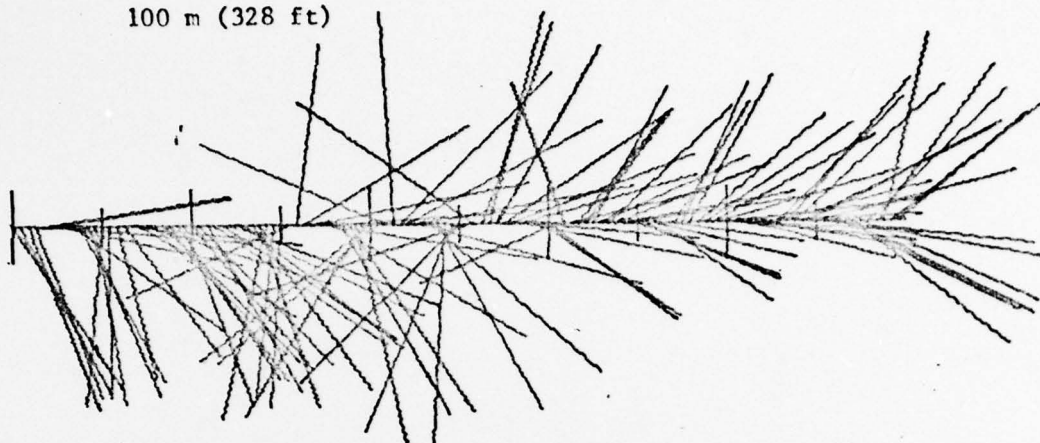
1000 m (3280 ft)



1948 m (6389 ft)



100 m (328 ft)



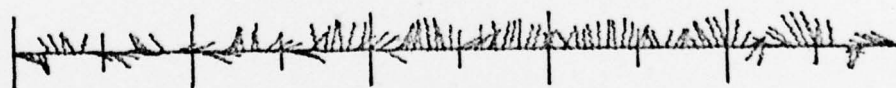
200 m (656 ft)



500 m (1640 ft)



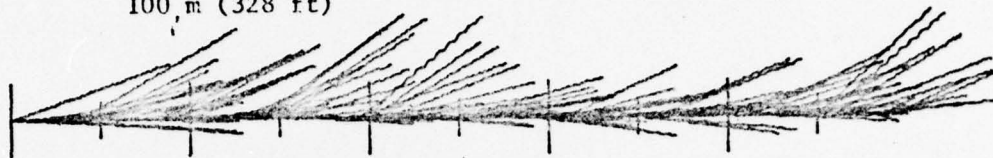
1000 m (3280 ft)



1948 m (6389 ft)



100 m (328 ft)



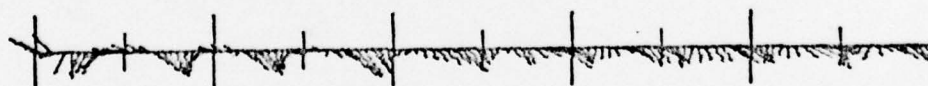
200 m (656 ft)



500 m (1640 ft)



1000 m (3280 ft)

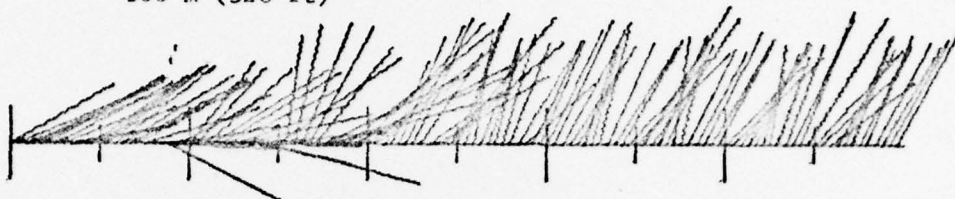


1948 m (6389 ft)





100 m (328 ft)



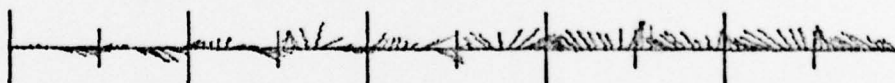
200 m (656 ft)



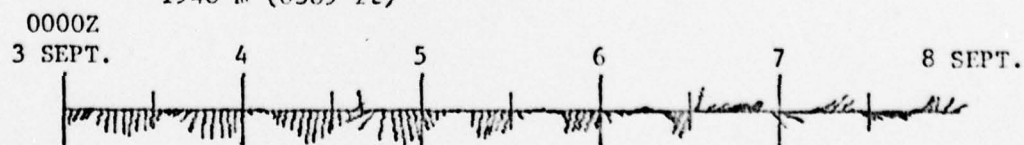
500 m (1640 ft)



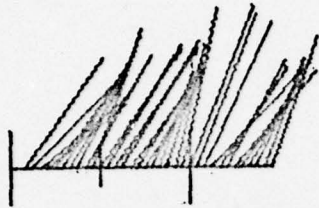
1000 m (3280 ft)



1948 m (6389 ft)



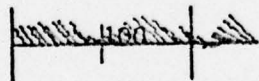
100 m (328 ft)



200 m (656 ft)



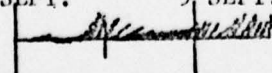
1000 m (3280 ft)



1948 m (6389 ft)

0000Z  
8 SEPT.

9 SEPT.



NAVOCEANO TECH. NOTE  
NO. 6110-2-75

SUBJECT: Results of Current Observations WILKES Norwegian Sea Operations  
(Arrays 1 and 2)

NAVOCEANO TECHNICAL NOTE NO. 6110-2-75  
(SUPPLEMENT)

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